

Claims

- [c1] 1. An under bump metallurgy layer, between a bonding pad of a chip and a bump, for improving adhesion between the bonding pad and the bump, comprising:
an adhesion layer, disposed on the bonding pad;
a barrier layer, disposed on the adhesion layer; and
a wetting-barrier layer, disposed on the barrier layer and between the barrier layer and the bump, wherein a material of the bump comprises tin, and wherein a material of the wetting-barrier layer is made of nickel.
- [c2] 2. The under bump metallurgy layer of claim 1, wherein a material of the adhesion layer is selected from the following group consisting of titanium (Ti), titanium-tungsten (Ti-W) alloy, chromium (Cr), titanium nitride (TiN), tantalum nitride (TaN), tantalum (Ta), aluminum (Al) and copper (Cu).
- [c3] 3. The under bump metallurgy layer of claim 1, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and aluminum, if the bonding pad is made of aluminum.

- [c4] 4. The under bump metallurgy layer of claim 1, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and copper, if the bonding pad is made of copper.
- [c5] 5. The under bump metallurgy layer of claim 1, wherein a material of the barrier layer comprises nickel-vanadium alloy.
- [c6] 6. The under bump metallurgy layer of claim 1, wherein the under bump metallurgy layer further comprises an anti-oxidation layer and the anti-oxidation layer is disposed between the wetting-barrier layer and the bump.
- [c7] 7. The under bump metallurgy layer of claim 6, wherein a material of the anti-oxidation layer comprises gold.
- [c8] 8. A flip chip structure, comprising:
a chip having an active surface, a passivation layer and a plurality of bonding pads, wherein the bonding pads are disposed on the active surface and the passivation layer are disposed on the active surface exposing the bonding pads;
an under bump metallurgy layer, wherein the under bump metallurgy layer comprises:
an adhesion layer, disposed on the bonding pad;

a barrier layer, disposed on the adhesion layer; and
a wetting-barrier layer, disposed on the barrier layer,
wherein a material of the wetting-barrier layer comprises
nickel; and
a bump, disposed on the wetting-barrier layer..

[c9] 9. The flip chip structure of claim 8, wherein a material of the adhesion layer is selected from the following group consisting of titanium (Ti), titanium-tungsten (Ti-W) alloy, chromium (Cr), titanium nitride (TiN), tantalum nitride (TaN), tantalum (Ta), aluminum (Al) and copper (Cu).

[c10] 10. The flip chip structure of claim 8, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and aluminum, if the bonding pad is made of aluminum.

[c11] 11. The flip chip structure of claim 8, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and copper, if the bonding pad is made of copper.

[c12] 12. The flip chip structure of claim 8, wherein a material of the barrier layer comprises nickel-vanadium alloy.

- [c13] 13. The flip chip structure of claim 8, wherein the under bump metallurgy layer further comprises an anti-oxidation layer and the anti-oxidation layer is disposed between the wetting-barrier layer and the bump.
- [c14] 14. The flip chip structure of claim 13, wherein a material of the anti-oxidation layer comprises gold.
- [c15] 15. The flip chip structure of claim 8, wherein a material of the bump is made of tin-silver-copper alloy.
- [c16] 16. The flip chip structure of claim 8, wherein a material of the bump is made of tin-copper alloy.
- [c17] 17. The flip chip structure of claim 8, wherein a material of the bump comprises tin.
- [c18] 18. A flip chip structure, comprising:
a chip having an active surface, a passivation layer and a plurality of bonding pads, wherein the bonding pads are disposed on the active surface and the passivation layer are disposed on the active surface exposing the bonding pads;
an adhesion layer, disposed on the bonding pad;
a barrier layer, disposed on the adhesion layer; and
a wetting-barrier post, disposed on the barrier layer,
wherein a thickness of the wetting-barrier post is larger

than that of the adhesion layer; and
a bump, disposed on the wetting-barrier post.

- [c19] 19. The flip chip structure of claim 18, wherein a material of the wetting-barrier post is made of nickel.
- [c20] 20. The flip chip structure of claim 18, wherein a material of the bump is made of lead-free solder.
- [c21] 21. The flip chip structure of claim 18, wherein the thickness of the wetting-barrier post is larger than the thickness of the adhesion layer and the barrier layer.